
ENVIRONMENTAL Fact Sheet



29 Hazen Drive, Concord, New Hampshire 03301 • (603) 271-3503 • www.des.nh.gov

WD-DWGB-7-8

2009

Guidance on Addressing Bacteria Contamination in Small Transient Water Systems

This guidance is intended to assist small transient public water systems in New Hampshire to quickly evaluate and correct bacteria contamination for compliance with the Total Coliform Rule (TCR). Under some circumstances, systems may be contacted to perform *immediate* actions such as a boil order, to prevent the spread of bacteria contamination.

If your water system has incurred two bacteria violations within a 12-month period, you are probably receiving this fact sheet along with a **Letter of Deficiency** (LOD). The LOD requests that you perform a more detailed evaluation and correct the deficiencies identified within a set timeframe. This document provides a stepped procedure to assist you and your consultant in this evaluation.

COLIFORM BACTERIA SAMPLING UNDER THE TCR

Total coliform bacteria are used as indicators for the possible presence of disease-causing organisms, such as fecal or other contamination sources. Two or more positive total coliform samples in a month will result in a **standard MCL violation** for the water system.

***E. coli* and fecal bacteria** are disease-causing bacteria in the coliform group, which originate from warm-blooded human or animal sources. In New Hampshire, a positive *E.coli* or positive fecal coliform sample results in an immediate **Boil Order** for the public water system.

ADDRESSING THE VIOLATION

1. **System Evaluation** – DES recommends collecting *additional* system evaluation samples to help you to isolate and address the problem more effectively. This is in addition to your previous instructions to take samples at specific locations to comply with the TCR requirements. A “*General System Evaluation Form*” is provided at the end of your master sampling schedule at <http://des.nh.gov/onestop/index.htm>, specifically for this purpose. If not already sampled, your additional samples should include:
 - Raw well source(s). **Required** for all positive bacteria effective Dec 2009.
 - Following major treatment units, such as filters and aeration units, as applicable.
 - Before and after atmospheric storage, as applicable.
 - Distribution entry point (last tap in the pump house).
2. **Eliminating the Source of Contamination** – If contamination is from the well source, examine your well construction and sanitary protective area for possible bacteria sources. Contact a **licensed** well contractor (see <http://des.nh.gov/onestop/index.htm> for current listings) to diagnose any construction deficiencies in your existing well source. Note that all modifications to a PWS are subject to prior approval by the State.

3. **Shock Chlorination** – Please refer to DES fact sheet **DWGB-4-3 Disinfecting Public Water Systems**, or contact the DES Drinking Water and Groundwater Bureau for the procedure for disinfecting your well source. Proper sanitizing of the water system is required after all repairs or new work is completed. Note that installation of permanent disinfection requires prior approval by the State.
4. **Persistent bacteria violations** – If your system has followed steps 1-3 above and you wish to continue serving water to the public, two remaining options to address bacteria violations are:
 - a) Develop an alternative water source, either a new well or connection to another PWS. Per the Safe Drinking Water Act, bottled water is not a permanent solution to address a PWS violation.
 - b) Install disinfection treatment.

DES will **not** approve the installation of permanent disinfection as a corrective measure for poorly maintained well sources, inadequate operations or maintenance, or resolution of correctible well and/or system construction deficiencies. However, if you have exhausted all other corrective measures and wish to pursue disinfection, the following must be submitted for state approval **prior** to its installation:

1. **Consultant Report** detailing the results of the bacteria evaluation and corrective measures, including the recommendation to install permanent treatment.
2. **Simple schematic** showing the location and sizes of all existing and proposed treatment equipment, source water meter, sampling taps, and storage and/or pressure tanks. Pretreatment shall be as recommended by the equipment manufacturer.
3. **Specifications** for the proposed equipment, certified under NSF61 Health Effects for use in drinking water treatment. Installation shall be in accordance with the manufacturer's specifications.
4. **Operational & Maintenance Plan**, including the name of a New Hampshire certified operator, contractor, or owner representative responsible for performing regular maintenance of the equipment. Minimum operational controls shall be as outlined below for disinfection options.

Treatment approval will be conditioned upon perpetual **monthly compliance sampling** for bacteria. Approval may be *rescinded* if bacteria violations persist despite the installation of disinfection, and the system may be required to provide additional treatment or develop an alternative water source.

5. **Disinfection options** – For very small public water systems, disinfection is generally limited to some form of chlorination or UV light, though other disinfection agents may also be proposed. The following general comparison is offered to assist in your evaluation:

Description	Chlorination	UV Light
Capital Cost (2008 dollars)	\$1,500 - \$3,000	\$300 to \$3,000
O&M costs (not including labor)	<\$100/yr chlorine stock electricity nil	1/yr lamp replacement \$100 - 200 electricity equivalent to a 40W bulb
Maintenance checks	Daily check Tank refill as needed	Daily check Annual lamp replacement
Minimum Control Requirements	Chemical feed interlock with well pump operation	Lamp on/off indicator and audible alarm Run time clock/lamp replacement reminder
State reporting	Monthly bacteria samples for the life of the treatment system.	

ADDITIONAL INFORMATION

DES Drinking Water and Groundwater Bureau, www.des.nh.gov
 29 Hazen Drive, PO Box 95, Concord NH 03302-0095
 (603) 271-2513, dwgbinfo@des.nh.gov or (603) 271-2949, James.Gill@des.nh.gov

DES Drinking Water and Groundwater Bureau fact sheets:
<http://des.nh.gov/organization/commissioner/pip/factsheets/dwgb/index.htm>